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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/064,536	07/25/2002	Tsung-Liang Lin	9741-US-PA	8350

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JIANQ CHYUN INTELLECTUAL PROPERTY OFFICE
7 FLOOR-1, NO. 100
ROOSEVELT ROAD, SECTION 2
TAIPEI, 100
TAIWAN

EXAMINER	
MILORD, MARCEAU	

ART UNIT	PAPER NUMBER
2682	

DATE MAILED: 09/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/064,536	LIN ET AL.	
	Examiner	Art Unit	
	Marceau Milord	2682	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 June 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-5, 7-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vuorio et al (US Patent No 6535748 B1) in view of Vaisanen et al (US Patent No 6560443 B1) and Rambo (US Patent No 4499606).

Regarding claims 1, 5, 7-8, Vuorio et al discloses a wireless communication circuit architecture, suitable for use in a wireless local area network system operated in a transmitting mode and a receiving mode (figs. 5-7; col. 5, line 42-col. 6, line 67), the circuit architecture comprising: a first antenna (2 of figs. 5-7) and a second antenna (30 of figs. 5-7), wherein the second antenna is also set to be used as a transmitting antenna; an antenna, including a first input terminal and a second input terminal for respectively receiving signals from the first antenna and the second antenna as well as selecting one of the signals as an output (col. 6,lines 35-67; col. 9, lines 12-44); a first filter (32 of fig. 5) used to receive the output signal from the antenna (col. 8, lines 13-52); a radio frequency integrated circuit unit, used to receive an output signal from the

first filter (32 of fig. 5) during the receiving mode as well as output a transmitting signal during the transmitting mode; a power amplifier, used to receive the transmitting signal and amplify the transmitting signal; a second filter (44 of fig. 5), receiving the amplified transmitting signal to filter away an undesired frequency noise (col. 9, lines 9-54; col. 11, line 57-col. 12, line 15).

However, Vuorio et al does not specifically disclose the feature of an antenna switch, and a transmission/receiving (T/R) switch, receiving the transmitting signal from the second filter, wherein the T/R switch can also be switched to allow the signal received from the second antenna to be output to the second terminal of the antenna switch.

On the other hand, Vaisanen et al, from the same field of endeavor, discloses an antenna switching circuitry in a multi-transceiver mobile terminal, which features a first switching unit which couples a first transceiver port to either a first antenna port or a second antenna port; and a second switching unit which couples the second antenna port to either the first transceiver port, through the first switching unit, or to an input/output port of a second transceiver (col. 4, lines 43-52;col. 5, lines 5-26). Furthermore, diversity selection can be made between the first and second antennae ports (col. 7, line 36- col. 8, line 19).

Rambo also discloses a system for enhancing the quality of a signal received by a mobile FM transmitter by reducing the adverse effects of multipath transmission to the receiver. A pair of antennas is provided, and each antenna is arranged to receive transmitted signals that traverses a different path. The signal produced in the receiver by one antenna is compared with a reference threshold and when the amplitude of the signal falls below the reference threshold, the receiver switches to the other antenna. The signal amplitude is sensed in a high frequency portion of the receiver, i.e. before detection or demodulation, so that switching between antennas occurs

rapidly and is normally not perceived by the user of the receiver (col. 3, lines 6-43; col. 4, lines 47-68). The other antenna is arranged to receive a signal different from that received by the first antenna; this is achieved by physically spacing the latter antenna from the former and/or by establishing the latter antenna at an orientation different from the former antenna. The sensing circuit produces an output on a circuit path which is indicative of the condition of the signal received via the antenna that is connected by the RF switch to RF input terminal (col. 5, lines 1-34). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Rambo to the modified system of Vaisanen and Vuorio in order to achieve an improved switched diversity receiver in which antenna selection is based upon the disturbance level in the received signal, and not alone upon aggregate signal strength.

Regarding claim 2, Vuorio et al as modified discloses a wireless communication circuit architecture, suitable for use in a wireless local area network system operated in a transmitting mode and a receiving mode (figs. 5-7; col. 5, line 42-col. 6, line 67), wherein the first filter comprises a band pass filter (col. 2, lines 35-55;col. 11, lines 46-67).

Regarding claim 3, Vuorio et al as modified discloses a wireless communication circuit architecture, suitable for use in a wireless local area network system operated in a transmitting mode and a receiving mode (figs. 5-7; col. 5, line 42-col. 6, line 67), wherein the second filter comprises a band pass filter with a low pass filter (col. 2, lines 35-55;col. 9,lines 4-44).

Regarding claim 4, Vuorio et al as modified discloses a wireless communication circuit architecture, suitable for use in a wireless local area network system operated in a transmitting

mode and a receiving mode (figs. 5-7; col. 5, line 42-col. 6, line 67), wherein the second filter comprises only a low pass filter (col. 4, lines 3, lines 5-44).

Regarding claim 9, Vuorio et al as applied to claim 1 above differs from claim 5 in the present invention, in that Vuorio fails to disclose a circuit architecture that satisfies a protocol of IEEE 802.11 b.

However, Vaisanen et al discloses a switching scheme for diversity antennae in a multi-transceiver mobile terminal where one such transceiver may be a WLAN conforming to the IEEE 802.11 standard for DSS radio communication and the other may be a relatively lower power/lower range radio operating on the same ISM radio band as the WLAN such as confirming to Bluetooth radio (col. 4, lines 43-67). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Vaisanen to the communication system of Vuorio in order to achieve an antennae sharing scheme for sharing diversity antennae efficiently and as economically as possible.

Regarding claims 10-11, Vuorio et al discloses a wireless communication circuit architecture, suitable for use in a wireless local area network system operated in a transmitting mode and a receiving mode (figs. 5-7; col. 5, line 42-col. 6, line 67), the circuit architecture comprising: a first antenna (2 of figs. 5-7) and a second antenna (30 of figs. 5-7), wherein the second antenna is also set to be used as a transmitting antenna; an antenna, including a first input terminal and a second input terminal for respectively receiving signals from the first antenna and the second antenna as well as selecting one of the signals as an output (col. 6,lines 35-67; col. 9, lines 12-44); a band pass filter, used to receive the output signal from the antenna (col. 8, lines 13-52); a radio-frequency integrated circuit unit without intermediate frequency voltage

controlled oscillator, used to receive an output signal from the BPF during the receiving mode as well as output a transmitting signal during the transmitting mode; a power amplifier, used to receive the transmitting signal and amplify the transmitting signal; a low pass filter, receiving the amplified transmitting signal to filter away an undesired frequency noise (col. 9, lines 9-54; col. 11, line 57-col. 12, line 15).

However, Vuorio et al does not specifically disclose the feature of an antenna switch, and a transmission/receiving (T/R) switch, receiving the transmitting signal from the second filter, wherein the T/R switch can also be switched to allow the signal received from the second antenna to be output to the second terminal of the antenna switch.

On the other hand, Vaisanen et al, from the same field of endeavor, discloses an antenna switching circuitry in a multi-transceiver mobile terminal, which features a first switching unit which couples a first transceiver port to either a first antenna port or a second antenna port; and a second switching unit which couples the second antenna port to either the first transceiver port, through the first switching unit, or to an input/output port of a second transceiver (col. 4, lines 43-52;col. 5, lines 5-26). Furthermore, diversity selection can be made between the first and second antennae ports (col. 7, line 36- col. 8, line 19).

Rambo also discloses a system for enhancing the quality of a signal received by a mobile FM transmitter by reducing the adverse effects of multipath transmission to the receiver. A pair of antennas is provided, and each antenna is arranged to receive transmitted signals that traverses a different path. The signal produced in the receiver by one antenna is compared with a reference threshold and when the amplitude of the signal falls below the reference threshold, the receiver switches to the other antenna. The signal amplitude is sensed in a high frequency portion of the

receiver, i.e. before detection or demodulation, so that switching between antennas occurs rapidly and is normally not perceived by the user of the receiver (col. 3, lines 6-43; col. 4, lines 47-68). The other antenna is arranged to receive a signal different from that received by the first antenna; this is achieved by physically spacing the latter antenna from the former and/or by establishing the latter antenna at an orientation different from the former antenna. The sensing circuit produces an output on a circuit path which is indicative of the condition of the signal received via the antenna that is connected by the RF switch to RF input terminal (col. 5, lines 1-34). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Rambo to the modified system of Vaisanen and Vuorio in order to achieve an improved switched diversity receiver in which antenna selection is based upon the disturbance level in the received signal, and not alone upon aggregate signal strength.

Claim 12 contains similar limitations addressed in claim 9, and therefore is rejected under a similar rationale.

Regarding claims 13, 17-18, Vuorio et al discloses a method for receiving a receiving radio-frequency signal and transmitting a transmitting RF signal, suitable for use in a wireless local area network system operated in a transmitting mode and a receiving mode (figs. 5-7; col. 5, line 42-col. 6, line 67), the method comprising: providing a first antenna (2 of figs. 5-7) and a second antenna (30 of figs. 5-7), wherein the second antenna is also set to be used as a transmitting antenna during the transmitting mode; during the receiving mode, performing the steps of: selecting one of the first antenna and the second antenna to receive the receiving RF signal (col. 6,lines 35-67; col. 9, lines 12-44); filtering the receiving RF signal by a first filter at a

first noise frequency range; and sending the filtered to a RF integrated circuit unit for processing; and during the transmitting mode, performing the steps of: transmitting the transmitting RF signal from the RFIC unit; amplifying the transmitting RF signal; filtering the amplified transmitting RF signal by a second filter at a second noise frequency range (col. 9, lines 9-54; col. 11, line 57-col. 12, line 15).

However, Vuorio et al does not specifically disclose the step of transmitting the amplified transmitting RF signal through the second antenna, without passing through the first filter.

On the other hand, Vaisanen et al, from the same field of endeavor, discloses an antenna switching circuitry in a multi-transceiver mobile terminal, which features a first switching unit which couples a first transceiver port to either a first antenna port or a second antenna port; and a second switching unit which couples the second antenna port to either the first transceiver port, through the first switching unit, or to an input/output port of a second transceiver (col. 4, lines 43-52;col. 5, lines 5-26). Furthermore, diversity selection can be made between the first and second antennae ports (col. 7, line 36- col. 8, line 19).

Rambo also discloses a system for enhancing the quality of a signal received by a mobile FM transmitter by reducing the adverse effects of multipath transmission to the receiver. A pair of antennas is provided, and each antenna is arranged to receive transmitted signals that traverses a different path. The signal produced in the receiver by one antenna is compared with a reference threshold and when the amplitude of the signal falls below the reference threshold, the receiver switches to the other antenna. The signal amplitude is sensed in a high frequency portion of the receiver, i.e. before detection or demodulation, so that switching between antennas occurs rapidly and is normally not perceived by the user of the receiver (col. 3, lines 6-43; col. 4, lines

47-68). The other antenna is arranged to receive a signal different from that received by the first antenna; this is achieved by physically spacing the latter antenna from the former and/or by establishing the latter antenna at an orientation different from the former antenna. The sensing circuit produces an output on a circuit path which is indicative of the condition of the signal received via the antenna that is connected by the RF switch to RF input terminal (col. 5, lines 1-34). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Rambo to the modified system of Vaisanen and Vuorio in order to achieve an improved switched diversity receiver in which antenna selection is based upon the disturbance level in the received signal, and not alone upon aggregate signal strength.

Regarding claim 14, Vuorio et al discloses a method for receiving a receiving radio-frequency signal and transmitting a transmitting RF signal, suitable for use in a wireless local area network system operated in a transmitting mode and a receiving mode (figs. 5-7; col. 5, line 42-col. 6, line 67), wherein in the step of filtering the receiving RF signal, the first filter comprises a band pass filter (col. 2, lines 35-55;col. 11, lines 46-67).

Regarding claim 15, Vuorio et al as modified discloses a method for receiving a receiving radio-frequency signal and transmitting a transmitting RF signal, suitable for use in a wireless local area network system operated in a transmitting mode and a receiving mode (figs. 5-7; col. 5, line 42-col. 6, line 67), wherein in the step of filtering the amplified transmitting RF signal, the second filter comprises a combination of a band pass filter or a low pass filter (col. 2, lines 35-55;col. 9,lines 4-44).

Regarding claim 16, Vuorio et al as modified discloses a method for receiving a receiving radio-frequency signal and transmitting a transmitting RF signal, suitable for use in a wireless local area network system operated in a transmitting mode and a receiving mode (figs. 5-7; col. 5, line 42-col. 6, line 67), wherein in the step of filtering the amplified transmitting RF signal, the second filter only comprises the LPF (col. 4, lines 3, lines 5-44).

Regarding claim 19, Vuorio et al as modified discloses a method for receiving a receiving radio-frequency signal and transmitting a transmitting RF signal, suitable for use in a wireless local area network system operated in a transmitting mode and a receiving mode (figs. 5-7; col. 5, line 42-col. 6, line 67), further comprising a step of selecting the transmitting RF signal and the receiving RF signal, when the second antenna is chosen for both use in the transmitting mode and the receiving mode (col. 6,lines 35-67; col. 9, lines 12-44).

Claim 20 contains similar limitations addressed in claims 9 and 12, and therefore is rejected under a similar rationale.

1. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vuorio et al (US Patent No 6535748 B1) in view of Vaisanen et al (US Patent No 6560443 B1) and Rambo (US Patent No 4499606) as applied to claim 1 above, and further in view of Carlson (US Patent No 6694151 B2).

Regarding claim 6, Vuorio, Vaisanen and Rambo disclose everything as explained above except the features of a BALUN circuit between the first filter and the RFIC unit, so as to convert the output signal of the first filter into a differential signal for use in the RFIC unit.

However, Carlson discloses an antenna array that includes a first antenna and a second antenna having a radiating element and a reflecting element. The second antenna includes a

radiating element coupled to the transceiver by a BALUN and a reflecting element (col. 4, line 40- col. 5, line 24). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Carlson to the modified system of Vaisanen, Vuorio and Rambo in order to achieve antenna diversity for digital cameras that incorporates wireless RF transceivers for communicating digital images and an improved means of transmission and reception.

Response to Arguments

2. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marceau Milord whose telephone number is 571-272-7853. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nick Corsaro can be reached on 571-272-7876. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MARCEAU MILORD

Marceau Milord

Primary Examiner

Art Unit 2682